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Authority was given to the Committee in charge of Say's Conchology to sell copies of impressions of the plates of that work.

May 18th.

Vice President BRIDGES in the Chair.

Forty-five members present.

Mr. Lea exhibited some remarkable specimens of UNIONIDÆ, six to eight inches wide. Some of these had the soft parts, and he called attention to two fine specimens of *Margaritana complanata*, and *Unio multiplicatus*, both females, with the oviducts fully charged with embryonic shells, ready to be discharged by the parents. There were two important points he wished to be noticed. 1st. The enormous quantity of young in the mass of the outer branchiæ of the *Margaritana*, (the branchiæ were 3 × 1¼ × ½ inches,) each specimen containing probably several millions of individuals. 2nd. That the *Unio multiplicatus* was peculiar in having *both lobes* on *both sides*, charged with embryonic shells, containing no doubt several millions of individuals. This species of *Unio* is the *only one* Mr. Lea had ever observed furnished with oviducts in *all the four leaves* of the branchiæ. It is very probable that half a dozen of these *Mollusca* would produce individuals equal in number to the population of the whole United States.

Mr. Cassin announced the death of Dr. Robert Hare, late a member of the Academy.

May 25th.

Vice President BRIDGES in the Chair.

Twenty-six members present.

The Proceedings of the Biological Department for the current month were presented.

The following papers were ordered to be published in the Proceedings:

Notes on American Land Shells. No. 3.

BY W. G. BINNEY.

The following species of Helicidæ, now first described, were collected by Dr. F. V. Hayden, of the Yellowstone Ex. Ex., (Lieut. G. K. Warren), Dr. T. S. Newberry, of the Colorado R. Ex. Ex., (Lieut. Ives). Mr. Robert Kenicott, during a recent visit to the Red River of the North, and in Mexico by the late Mr. Berlandière, whose valuable collections were bought and presented to the Smithsonian Institute by Lieut. Couch. Specimens of all the species are deposited in the collection of that Institution, and also in that of the Academy, through the kindness of Prof. Baird, and the gentlemen named above. Figures of these, and all species described by me, will be published at some subsequent time.

SUCCINEA HAYDENI.—Testa elongato-ovalis, tenuis, pellucida, succinea; spira parva, acuta; anfr. 3 convexi, ultimus rugis levibus incrementalibus et sulcis crassis spiralibus, interruptis, inequaliter notatus; sutura mediocris; columella callo levi induta, apicem interiorem a basi testæ mostrans; apertura obliqua, ovalis, 5-7 long. testæ æquans, ad basin expansior. Long. 21; diam. 9 mill.

Habitat in provinciâ Nebraskâ, frequens inter flumina "Loup Fork," et "L'eau qui court" Dr. F. V. Hayden! (Yellowstone Ex. Ex.)

Var. MINOR.—Long. 15 mill. ad "Red River of the North," legit R. Kennicott. Shell elongate-oval, thin, shining, amber-colored ; spire short, acute; whorls three, convex, the last marked with the wrinkles of growth, and irregular, heavy, spiral furrows ; suture moderate ; columella covered lightly with callus ; and allowing all the interior whorls to be seen from below to the apex ; aperture oblique, oval, 5-7ths the length of the shell, the lower portion of its margin considerably expanded.

Mr. Say describes *S. ovalis* as showing the interior apex from the base of the shell ; in other respects his description does not apply to this shell. Its aperture is nearer that of *S. ovalis*, Gould non Say, but the peristome is much more flexuose, and the upper third of the shell becomes gradually attenuated, so as to give a sharp pointed appearance, though the spire itself is short. The revolving lines are sometimes continuous over the whole body whorl, but generally interrupted, or confined to the interstices of the incremental striæ or wrinkles. It shares this peculiarity with *S. concordialis*, Gould, and *S. lineata*, nob.

Named in honor of Dr. F. V. Hayden.

HELIX COOPERI.—Testa umbilicata; elevato-globosa: solida; striis obliquis incrementi et lineis spiralibus leviter intercidentibus notata ; alba, ad peripheriam fasciâ unicâ, angustâ, rufâ, cincta, aut fasciis et lineis rufis, volventibus, variê dispostis, ornata ; sutura impressa ; spira elevata ; anfr. 5 convexi, ultimus rotundatus, ad aperturam valde descendens; umbilicus mediocris, pervius, 1-5 diam. maj. testæ æquans ; apertura perobliqua, circularis ; perist. simplex, incrassatum, ad umbilicum reflexiusculum, marginibus valde approximatis, callo albo, crasso, conjunctis. Diam. maj. 15 ; min. 13 ; alt. 9 mill.

Habitat, Black Hills, provinciâ Nebraskâ, frequens. Dr. F. V. Hayden ! (Yellowstone R. Ex. Ex., Lieut. Warren.)

Shell umbilicated ; elevated, globose ; solid, with oblique incremental striæ intersected with delicate spiral lines ; color white, variously marked with a single narrow band, or broader longitudinal and spiral patches of reddish-brown ; suture impressed ; spire elevated ; whorls five, convex, the last rounded, very decidedly deflected at the aperture ; umbilicus moderate, pervious, 1-5th the greater diameter of the shell ; aperture very oblique, circular ; perist. simple, thickened, reflected at the umbilicus, with its extremities very nearly approached, and joined by a heavy white callus.

Resembles nearly no described American species. Has an elevated spire like *H. pennsylvanica*, Green, and somewhat approaches *H. solitaria*, Say. It is, however, very much smaller, has rougher striæ and revolving lines ; the umbilicus is different, as is also the circular aperture, with nearly approaching ends like *H. vittata*, Mull., of Ceylon. There is a curious variety of *H. solitaria*, Say, found by Lieut. Bryan at Bridger's Pass, which may be compared with this in size, but the only specimen I have examined has no revolving lines, and wants the characteristic aperture. Some specimens of this species have a more flattened spire.

Named in honor of Dr. J. G. Cooper, of P. R. R. Survey.

HELIX NEWBERRYANA. Testa latè umbilicata ; orbiculato-depressa ; solida ; striis tenuibus incrementi et lineis subtilissimis, spiralibus, leviter granulato-decussata ; nigra, aut rufo-brunnea, sub epiderme alba ; sutura valdè impressa ; spira depressa ; anfr. 6, regulariter accrescentes, superi plani, ultimus convexus, subtus rotundatus, ad aperturam descendens; umbilicus latus, perspectivus, anfr. omnes ad apicem mostrans ; apertura obliqua, transverso-lunaris ; in exemplis junioribus, paries aperturalis, sculpturâ anfr. præcedentis, callo levi obliterata, eleganter notata est lineis elevatis, numerosis, confertis, spiralibus ; in exemplis maturis, hæc sculptura occulta est callo incrassato, sed intus in anfr. omnibus remanet; perist. simplex, acutum, intus callosum, marginibus subconvergentibus, callo albo conjunctis. Diam. maj. 37 ; min. 20 : alt. 13 mill.

Habitat in Californiâ. Specimina plurima collegit Dr. J. S. Newberry. (Colorado Ex. Ex. Lieut. Ives.)

Shell broadly umbilicated; orbicularly-depressed; solid; lightly decussated by incremental striæ, and numerous fine spiral lines: color black or reddish brown, under the epidermis white and shining; suture deeply impressed; spire depressed; whorls 6, regularly increasing, the upper ones flattened, the last convex, rounded below, and slightly deflected at the aperture; umbilicus broad, showing all the volutions clearly; aperture oblique, transversely-lunar; in young specimens the decussated sculpturing of the shell on the parietal wall of the aperture is covered with a light callus as the animal grows, and elegantly marked with numerous fine, crowded, spiral lines; in mature specimens this beautiful marking is entirely obliterated by the deposition of callus, but on breaking the shell, the lines will be found to exist within; peristome simple, acute, thickened within, ends slightly approximated, joined with a white callus.

This species bears no close resemblance to any known American *Helix*. It belongs to the same group as *H. vancouverensis*, Lea, but differs in size, color, number of whorls, umbilicus, want of peculiar depression of the lip, by its beautifully decussated surface, and peculiar parietal wall of the aperture. I know of no species sharing this last beautiful peculiarity. In form alone, dead specimens may be compared with *H. algira*, Lin., of Europe, but the spire is flatter and umbilicus larger.

Named in honor of Dr. J. S. Newberry, the Geologist of the Colorado Ex. Ex.

Bulimus patriarcha.—T. perforata, ovata, solidissima, alba, rugosa; anfr. 6 convexi, ultimus ventricosus, 5–7 long. testæ æquans; apertura ovata; perist. simplex, intus incrassatum, marginibus callo albo crasso junctis, columellari reflexo, umbilicum subtegente. Long. 35; diam. 19, aperturæ long. 19; diam. 13 mill.

Habitat in republicâ Mexicanâ. Specimina plurima et matura et nondum adulta, collegit Berlandière in Buenâ Vistâ.

Shell perforate, ovate, heavy, white and wrinkled; whorls 6, convex, the last ventricose, equalling in length 5–7 of the shell; aperture ovate; peristome simple, thickened within, the extremities joined by a heavy white callus, the columellar extremity slightly reflected so as partially to conceal the umbilicus.

Belongs to the same group as *Bul. dealbatus*, Say, *alternatus*, Say, *lactarius*, Mke., *liquatilis*, Reeve, *Schiedeanus*, Pf., &c. The characteristics which form its differences are alike present in young and old specimens, and constant in all from the locality. I therefore consider it as well entitled to specific distinction as those named.

Named from its greater size and more antiquated appearance, as compared with the allied species.

Description of a Phyllostome Bat from California, in the Museum of the Smithsonian Institution.

BY S. F. BAIRD.

Macrotus Californicus Baird. California Leafed-nosed bat.

The ears of this species are very large, scantily haired, ovate and rounded at the tip. Their outer edge extends forward to a little behind and below the eye; the inner edge is partially free. The two ears are connected by a membrane, which takes its rise about one-twentieth of an inch behind the anterior free edge of the ear, and is united to the corresponding strip of membrane of the opposite side, so as to form a kind of roof over the middle of the head, the entrance posterior. The tragus is narrow, lanceolate, naked and one-third the height of the ear. The nasal appendage is short, but rather higher than wide, and extending on the side and beneath the nostrils as a narrow margin. It is coated rather closely with short hairs. The lower jaw is slightly fissured anteriorly, with a small narrow wart on each side of the fissure; a groove or furrow extends from the fissure along each side the lower jaw.

The feet are entirely free ; the spur about as long : the membrane extending between the spurs is slightly concave, leaving the extremity of the tail free for the last joint, or for about one-sixth of its total length. The general color is a pale brownish gray, darker above than below.

Length to occiput	1.00	Length of tragus	.42
" to root of tail	2.60	" of leaf of nose	.30
" of tail	1.50	Wing, from carpal joint	3.00
" of ears	1.10	Fore-arm	2.00

This species closely resembles the *M. Waterhousii*, of Gray, from the West Indies. It differs, however, in the longer tail and shorter appendage of the nose, as well as in the widely different locality.

It is to the genus *Macrotus*, of the subfamily *Megadermata*, that the first leaf-nosed bat ever positively known as an inhabitant of the United States belongs. It was discovered at Fort Yuma, California, by Major G. H. Thomas, U. S. A. It is true that the *Brachyphyllum cavernarum* of the *Phyllostomata* has been given as occurring in South Carolina, but the statement has never been verified by any of the numerous corps of excellent naturalists resident in that State, and is probably an error.

Descriptions of two new species of Birds from the vicinity of Fort Tejon, California.

BY JOHN XANTUS DE VESEY.

TYRANNULA HAMMONDII De Vesey. Tail moderately forked; the feathers acutely pointed. Third quill longest, second and then fourth a little shorter. First much shorter than fifth, a little longer than sixth. Bill very narrow, dark brown. Above dark olive green, considerably darker on the head. Breast and sides of the body light olive green, the throat grayish white ; the rest of the under parts bright sulphur yellow. A whitish ring around the eye. Wings and tail dark brown, the former with two olivaceous grey bands across the coverts, the latter with the outer edge a little paler than elsewhere, but not at all white. Length 2½ inches.

This species is named after Dr. W. A. Hammond of the United States Army.

VIREO CASSINII De Vesey. Third and fourth quills nearly equal, fifth shorter, second longer than seventh. Spurious primary very narrow, falcate, acute, less than one third the second quill and a little more than one-fourth the third. Above, including edge of wing and tail feathers, clear olive green, becoming dusky ashy on the top and side of head. Beneath fulvous white, tinged with dull olive green on the sides (scarcely on the crissum.) Two broad bands on the wing coverts, and the outer edge of the innermost secondaries greenish-white ; the outer edge of outer tail feathers and a broad ring round the eyes, extending to a frontal band, dull white. Length 5 inches.

Descriptions of new Birds from Fort Thorn, New Mexico.

BY DR. T. CHARLTON HENRY, U. S. ARMY.

TOXOSTOMA CRISSALIS Henry. Second quill about as long as the secondaries. Bill much curved ; longer than the head. Above olive brown, with a faint shade of gray. Beneath nearly uniform brownish gray, much paler than the back, passing insensibly into white on the chin, but the under tail coverts dark brownish rufous abruptly defined. There is a black maxillary stripe, cutting off a white one above it, but there do not appear to be any other stripes about the head. There are no bands on the wings, and the tips and outer edges of the tail feathers are very inconspicuously lighter than the remaining portion. Length 11 inches; wing 4·00 inches ; tail 5¾ inches.

JUNCO DORSALIS Henry. Bill black above, bright brownish below.

Above, including the entire upper surface of the wings and scapulars, bright grayish ash, the inter-scapular region reddish chestnut-brown. Beneath ashy white, the middle of the belly almost pure white. Lores abruptly black. Quills and tail feathers nearly black; two outer entirely white; the third with brown on the inner edge. Length 6·25; wing 3·05; tail 3·10 inch.

Hab. Fort Thorn, New Mexico.

This species differs from JUNCO CINEREUS, (*Fringilla cinerea*, Sw.) in the absence of chestnut-brown on the wing coverts and tertials.

Description of Four New Fresh-water Molluscs, from the Isthmus of Darien and Honduras.

BY ISAAC LEA.

UNIO CALDWELLII. Testâ sulcatâ, ellipticâ, subinflatâ, posticè obtusè angulatâ, inæquilaterali; valvulis subcrassis; natibus subelevatis, ad apicès minutè undulatis; epidermide luteo-fuscâ; dentibus cardinalibus compressis, elevatis crenulatisque; lateralibus sublongis subrectisque; margaritâ salmonis colore tinctâ et iridescente.

Hab.—Isthmus of Darien. H. C. Caldwell, M. D., U. S. Navy.

UNIO GOASCORANENSIS. Testâ lævi, ellipticâ, subcompressâ, posticè obtusè angulatâ, valdè inæquilaterali; valvulis subcrassis, anticè crassioribus; natibus prominulis; epidermide fuscescente, transversè striatâ; dentibus cardinalibus parviusculis, suberectis crenulatisque; lateralibus sublongis subrectisque; margaritâ albâ et iridescente.

Hab.—River Goascoran, Honduras, Pacific Slope. J. L. LeConte, M. D.

ANODONTA LUTEOLA. Testâ lævi, obovatâ, subcompressâ posticè et anticè rotundatâ, inæquilaterali; valvulis subtenuibus; natibus prominulis; epidermide luteo-oliva, transversim striatâ; margaritâ albâ et valdè iridescente.

Hab.—Isthmus of Darien. H. C. Caldwell, M. D., U. S. Navy.

MELANIA PLANENSIS. Testâ lævi, subfusiformi, magnâ, crassâ, tenebroso-fuscâ; obsoletè maculatâ; spirâ elevatâ, conoideâ; suturis paulisper impressis; anfractibus instar novem, convexiusculis, striis transversis exilissimis impressis; aperturâ grandi, ovatâ, supernè angulatâ, intus fuscatâ; labro acuto; columellâ albidâ, supernè inspissatâ.

Operculo tenebroso-fusco.

Hab.—Plan and Omoa, Valley of Ulua River, Atlantic slope, Honduras. J. L. LeConte, M. D.

Memoranda of the effects of Carburetted Hydrogen Gas upon a collection of exotic Plants.

BY GEORGE W. FAHNESTOCK.

During the prevalence of severe cold weather in the latter part of January, and first few days in February, 1857, the earth was frozen to an unusual depth. Beneath the stone pavements in the streets of Philadelphia, the frost penetrated to a depth of more than three feet. In the neighborhood of Arch and Eighteenth streets, and along both those streets for the distance of nearly one hundred yards, the escape of gas from the main pipes under the street had been remarked for several weeks. Leaks at the joints had probably existed for months, although the porous nature of the soil had allowed the gas to diffuse itself, and find numerous vents at the surface. But the solid crust of frozen earth forced it to seek other channels of escape.

At this time, with the thermometer ranging from zero to 10° or 15° Fahrenheit, a current of gas, penetrating the imperfectly secured joints of the main pipes, made its way beneath the eastern foundation wall of the greenhouse of B. A. Fahnestock, on the southwest corner of Arch and Eighteenth Streets.*

When entering the houses on the morning of the first of February, the odor of gas was perceptible, which, on examination, was found issuing in a tolerably strong current through the ground near the north eastern corner of the greenhouse. It came up through a prepared border of soil between the wall of the house, and the flagging of the greenhouse floor. Although somewhat relieved by ventilation during the day, it was impossible to prevent its accumulation through the night; and by the following morning the work of destruction was accomplished. A choice and beautiful collection, numbering over three thousand plants, was, for the time being, almost utterly ruined. Many of the specimen plants were unique, and but rarely found in American collections. The house, which a day or two before had given promise of an abundant succession of winter flowers, now presented the desolate appearance of tender vegetation after a severe frost. In some parts of the premises, scarcely a single plant retained a leaf or bud. By the universal diffusion of this gas through the houses, many of the severest sufferers were those farthest removed from the point of its ingress.

That the plants had been absorbing carburetted hydrogen for some time was evident from the fact, hitherto unaccountable to the gardener and ourselves, that they had been occasionally shedding buds and leaves. Had there been no plants in the house, the peculiar odor of gas would doubtless have been perceptible for some days before the accident. Its volume proved to be much greater than we at first supposed. Those plants placed upon or near the floor, or upon the lower tiers of staging, suffered less than the taller specimens, or than such as were near the upper sash. This was especially the case with the Camellias, and other hardwooded plants.

The *full extent* of the damage was not apparent at first. Many plants maintained their fresh greenness without becoming shrivelled, or withering; yet although *seemingly* in fine health, they shed every leaf at the slightest touch. Syringing was resorted to with the hope that the absorption of water might, in some degree, counteract, or neutralize the noxious effects of the gas; but in most instances, the leaves and buds fell off when treated with gentle streams of water from a finely perforated syringe.

As no plant suffered unless in leaf at the time, it seems evident that the injury was effected and sustained by absorption through the medium of the foliage alone. The volume of gas was too small to be absorbed to any extent by the earth, or roots of the plants. Bulbs, and other plants, dry and at rest, were distributed in considerable number through the houses, both upon the upper shelves and beneath the staging.

A row of grape vines (not in leaf) stood against the eastern wall within the greenhouse, growing in a prepared border of earth under the table. The gaseous current passed directly through their roots. Saturated as the ground seems to have been with fresh gas, which was strongly manifest on taking up a handful of the earth, they do not appear to have sustained any injury thereby. A row of maple trees along the outer edge of the footwalk on Eighteenth street were also directly in the way of the current. They were not more than eight feet from the leaking pipes. Owing to the depth of frost it is probable that the flow of gas passed beneath their roots; nevertheless the ground within a few feet was black with the "*dead gas*." They sustained no apparent injury, put forth their leaves in the spring, and grew through the season with their usual vigor.

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* In order to convey as correct an idea as possible of the relative positions of the plants within the houses, it may be proper to observe briefly that the greenhouse is one hundred feet in length by twenty-five in breadth, runs north and south, and is substantially constructed of brick, with a span roof of sash. The western side is also of glass from within four feet of the ground. The span commences about eight feet from the floor, with the apex about seventeen feet in height. Included within the same range is the hot house, separated from the greenhouse by a sash partition, and communicating by two sash doors At the extreme end, farthest from the leak, a small orchid house opens into the hot-house.

As a general rule the hardwooded plants fared the worst. Succulents were the first to wither, and the first to recover. Large numbers of both hard and softwooded lost their tender twigs and young wood, which withered and required pruning as far back as the sound growth. While some showed signs of life, and began to put forth leaves within a few weeks, others lingered for months; some died after a sickly existence, and many were killed outright. Some plants near the leak, and under the full influence of the gas, manifested no apparent injury; others in the remote orchid house were violently affected, exhibiting an astonishing sensibility. It seems rather anomalous, that of the Orchidaceæ, whose sustenance is derived mainly from the atmosphere, every individual should have exhibited a total indifference to the gaseous influence. Several large specimens of *Bletia Tankervilliæa*, as well as plants of *Cypripedium venustum*, and *insigne*, passed unscathed through the heat of the battle.

That plants in general are peculiarly sensitive to this gas, even when it is almost consumed by combustion, seems to be well established. The experience of florists who supply blooming plants at entertainments, is, that the plants having been thus exposed are often in a sickly condition for some time thereafter. This is especially the case with Camellias. They frequently shed their foliage, and have been known to die after an exposure of a few hours in rooms where many gas lights were burning. This has no doubt been caused *in part* by the heated and impure air arising from crowded assemblages, but, if so, similar effects would be alike apparent in Horticultural exhibitions when open only by daylight.

No experiment similar to that which we are about to record has ever, to our knowledge, taken place upon so great a scale, or included within its range so large a number of genera. Solitary instances have been occasionally noted in which a limited number of species have been brought within the influence of acid and inflammable gases. Examples are not wanting, indeed, to confirm the destructive effects of carburetted hydrogen on vegetable organism. Many of the fine old elms in the streets of New Haven have been killed by leaks from the neighboring main gas pipes. Similar effects have been observed in Boston, Albany, and other cities in the United States.

In a review of a paper entitled "*Ueber Gasfabrikation und Gasbeleuchtung vom sanitätspolizeilichen Standpunkte; von Dr. Innhauser.* (*Wien. Wochenbl.* 35, 1856,)" the author quotes the observation of M. Ulex, of Hamburg, as follows: "In this city there are a great many linden and elm trees. In 1851, one hundred and fifty-nine of these trees had to be cut down because they had died. It was found that the bark immediately above the ground, often as far up as eight to ten feet, was quite loose, and completely separated from the wood; the roots soft and red, the fibres of the roots soft and rotten. The interior of the trees were perfectly sound. This injurious effect upon the trees is not only caused by the gas which escapes unburnt in the flame, but more particularly by that gas which leaks through the pipes in the ground. It was sometimes perceived at a distance of fifteen to twenty-five paces from the pipes. The same observations were made in Paris, Bordeaux, Düsseldorf, Mannheim, Basle, and Vienna. Professor Bertulus, of Marseilles, thinks that the combinations of sulphur and ammonia in the gas saturated the ground with hydrosulphate of ammonium, which also causes the black color of the soil."* (See Schmidt's Jahrbucher der gesammten Medicine. Band. 96, 1857. No. 11.)

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*Although not strictly within the range of the subject at present under consideration, it may not be out of place to remark that many instances are on record which show that vegetation has been seriously injured by *acid* gases from manufactories, especially in Belgium and Prussia. The same causes are said to have produced similar effects in a modified form in the vicinity of Philadelphia. This may account for the unusual mortality among the *Liriodendron tulipifera*, and other indigenous forest trees, killed from time to time in Penn Square, in the neighborhood of the United States Mint.

In reviewing these simple facts several questions naturally arise which possess more than ordinary interest for the vegetable physiologist, and may lead one step towards eliciting new developments in the chemical organization of plants.

Although no narrow nor definite limits can be drawn, still, the general characteristics tend to prove that a sympathy does often exist between genera of the same natural order. In glancing over the following memoranda of the effects of carburetted hydrogen gas upon each genus, this sympathy is frequently apparent throughout the various members of a family.*

Without venturing on further comment or attempting more than a brief outline, these facts are presented with the hope that the attention of chemists in their experiments upon vegetable organism may be directed towards further researches. It may be well enough to remark that the enumeration of the species under each genus was not deemed necessary. Wherever they were differently affected they have been so specified.

The natural classification of Lindley's Vegetable Kingdom has been adopted in the arrangement which follows, and the remarks are as much condensed as practicable.

In the Transactions of the Society for the encouragement of Industry in Prussia, (1857) is published an interesting extract from a report by Prof. Dr. E. L. Schubarth, of Berlin, to the Belgian government, " on the acid gases which escape from the manufactories of sulphuric acid and of soda, and the means to render them innoxious." It seems that " numerous complaints of the farmers that the vapors from the chemical manufactories in Belgium injured the vegetation of the fields and gardens, induced the government (of Belgium,) to appoint a commission to examine this matter. This commission consisted of chemists, botanists and farmers. During the summer of 1855, the excitement among the people, who even ascribed the potato-rot to the influence of the chemical factories, had so much increased that several attacks were made upon the factories. The government, therefore, increased the number of the commissioners, and at the end of the year, they made a report which was published under the title " Fabriques de produits Rapport a M. le ministre de l'Interieure par la commission d'enquetre, Bruxelles, 1856." They say it was an admitted fact that vegetation is injured by the acid gases from chemical works, but this influence is often overrated; the spots on the leaves, and injuries of the flowers ascribed to acid gases, are very frequently the result of other causes, as frost, microscopic, vegetable, and animal parasites, deposits of foreign matter upon the leaves, very intense sunlight, etc. The potato-rot is certainly neither caused nor increased by these gases. On the other hand, chemical investigations proved the presence of traces of hydrochloric acid in spotted leaves, and in the dew upon the plants. Similar spots could be artificially made by moistening the leaves with dilute hydrochloric acid, the presence of which could be proved after an interval of eight days. The report contains a list of trees injured by these gases.

* Several chemists of high reputation have made examinations of the gas of the Philadelphia Gas Works, but, from some cause, their results are at variance. In order to facilitate the further researches of such as may desire to investigate its effects on vegetable organism, I insert the analysis of Dr. C. M. Wetherill, made in 1852, for the engineer of the Philadelphia Gas Works. This is probably as nearly correct as can at present be determined.

Percentage by volume, gases dry, at 0° centigrade, and 1000 Millimetres Barometer.

	A.	B. 1	B. 2
Carbonic Acid, ...	00.000		
Olefiant gas and hydrocarbon vapors, ...	8.157	8.963	9.023
Oxygen, ...	0.052	0.136	0.120
Hydrogen, ...		44.168	
Light carburetted hydrogen, ...		41.620	
Carbonic oxide, ...		5.081	
Nitrogen, ...		0.059	
		100.000	

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ACROGENS.

LYCOPODIACEÆ.

Lycopodium were not visibly affected. Large plants of *L. Willdenovii*, *L. cœsium arboreum*, and *L. umbrosum* were within a short distance of the greenhouse door.

Selaginella. About twelve species were in the orchid house, none of which were affected.

POLYPODIACEÆ.

In a collection embracing nearly one hundred and fifty species of foreign and tropical Ferns, and comprising many hundred seedlings within the pots of orchids and other plants, no special change was observable. In some instances they became slightly yellow in the fronds, but their growth and health were not affected.

ENDOGENS.

ARACEÆ.

Caladium. A fine plant of *C. pictum* was killed. It withered to the root at once, and never recovered.

Philodendron was not affected.

Dieffenbachia. A plant of *D. seguina picta* was very slightly affected.

PANDANACEÆ.

Pandanus. Several fine specimens of *P. Javanicus fol. variegat.* in the hothouse were killed. The foliage became yellow, and withered, and the plants soon died. A plant of *P. graminifolius*, also in the hot house, was much injured, lost a part of its leaves and recovered slowly. Several plants of *P. Javanicus fol. var.* in the orchid house were not injured.

PALMACEÆ.

Chamœrops *humilis* became yellowish and sickly for some weeks, but did not lose its foliage, and gradually recovered.

Phœnix *dactylifera* was not affected.

BROMELIACEÆ.

Aechmea, Billbergia, Pitcairnia, Vriesia, Tillandsia, Dyckia, Melinonia, Pourretia, Puya. With the exception of *Puya Altensteinii*, which turned yellowish for a few weeks, no perceptible change was apparent in any of the Bromeliaceæ. A large number of individuals of this family were growing in the hot and orchid houses.

HÆMODORACEÆ.

Barbacenia *Rogierii* was not sensibly affected.

AMARYLLIDACEÆ.

Amaryllis, Brunsvigia, Crinum, Hæmanthus, Hymenocallis, Alströmeria. The greater number of bulbs, being dry and at rest, were not affected. Such as were in leaf, including *Crinum amabile*, showed yellow leaves, but were not otherwise injured.

Agave. Several specimens of *A. Americana* and *A. variegata* changed color. Their leaves turned yellowish, assuming a somewhat flaccid appearance. They recovered gradually through the spring.

IRIDACEÆ.

Dietes, Witsenia, were not affected. Ixia lost the flowers.

MUSACEÆ.

Heliconia *angustifolia* turned somewhat yellow, but soon recovered.

Musa. Some plants turned slightly yellow; the genus was very lightly affected.

Strelitzia *regina* passed through the ordeal without injury.

ZINGIBERACEÆ.

Zingiber, dry and unaffected. **Curcuma** were not affected. **Kœmpferia**, not affected. **Amomum**, dry and not affected. **Hedychium**, not affected. **Alpinia**, not affected.

None of the genera in this order were visibly injured. Some few were in leaf at the time, but the greater part were dry and not growing.

MARANTACEÆ.

Maranta. None of this genus were affected.

Calathea *zebrina* was not injured.

ORCHIDACEÆ.

Bletia, **Cypripedium.** These two genera were the only plants of this order directly exposed to the influence of the gas. They were not injured; nor could any effect be perceived in such orchids as happened to be in the hot house near the door of the orchid house. Of the collection within the orchid house not one exhibited any change.

COMMELYNACEÆ.

Tradescantia *discolor* has spread itself for a distance of more than twenty feet beneath one of the side tables in the hot house. No visible effects were observable.

ORONTIACEÆ.

Calla turned slightly yellow.

Pothos *crassinervis* was not visibly injured.

LILIACEÆ.

Lilium all turned yellow. **Gloriosa**, dry and unharmed. **Agapanthus** all turned yellow.

Velthemiia *viridiflora* was in flower at the time. The leaves turned yellow, but the plant soon recovered.

Aloe. None of the genus were affected. **Ornithogalum**, dry and unaffected.

Lachenalia *tricolor* lost all its leaves and flowers; recovered slowly.

Cordyline *congesta* was not injured.

Dracæna. Of several species in the hot house, none showed any change except *D. Brasiliensis*, which turned yellowish, but soon recovered.

GYMNOGENS.

CYCADEACEÆ.

Cycas *revoluta* was not perceptibly affected.

Zamia were not sensibly affected.

PINACEÆ.

Thuja were considerably injured in their entire loss of foliage; they recovered slowly.

Libocedrus *Chilensis* was not affected.

TAXACEÆ.

Taxus lost all their foliage, being near the leak. Their recovery was very gradual.

Torreya were not affected.

EXOGENS.

MORACEÆ.

Ficus. A very large specimen of *F. elastica* was somewhat injured. A portion of the foliage dropped off, and the remaining leaves exhibited a yellowish, sickly appearance for several months.

EUPHORBIACEÆ.

Euphorbia *jacquiniflora* was powerfully affected. All the individual plants of this species lost every leaf and flower, and recovered very gradually.

Poinsettia *pulcherrima* was affected in the same manner; not a leaf or bractea remained.

Croton. All the species lost their foliage, taking the spring and nearly all summer to recover.

BEGONIACEÆ.

Begonia. All the plants of this genus, embracing many species, suffered in the loss of flowers, and a part of the foliage. They all recovered, however, in the course of a few week

PASSIFLORACEÆ.

Passiflora, were but slightly affected.

Tacsonia, of several species, all lost their leaves and young twigs, but recovered.

CRASSULACEÆ.

Crassula. This genus seemed peculiarly sensitive to the gaseous influence. They all withered down to the root at once, and were killed outright.

Rochea, were not visibly injured.

TURNERACEÆ.

Turnera *elegans* lost all its foliage, and recovered again.

CISTACEÆ.

Cistus. Every individual of this family was immediately affected. They shed all their foliage, and such as were in flower dropped their bloom: they all recovered.

BRASSICACEÆ.

Alyssum lost all their blossoms and foliage—recovered.

RESEDACEÆ.

Reseda lost both leaves and flowers, and recovered.

BYTTNERIACEÆ.

Mahernia *odorata*, and varieties, were quick to lose all their leaves and flowers. They remained for some time to all appearances *dead*, but slowly recovered, with the loss of all the young wood.

TROPÆOLACEÆ.

Tropæolum. Some fine specimens of *T. azureum*, *T. tricolorum*, *T. Jarrettii*, and other varieties were killed at once to the ground. Although a year has elapsed, they have not yet exhibited signs of vegetating, although still alive.

MALVACEÆ.

Althæa, Malva, Abutilon, Hibiscus. Every individual in this order lost its entire foliage and flowers. In those of the genus *Abutilon*, the young wood was killed. They all recovered after some weeks.

TILIACEÆ.

Sparmannia. A large old specimen of *S. Africana* lost all its leaves and flowers. It had to be cut back, and recovered slowly.

TREMANDRACEÆ.

Tetratheca *Hugelii* lost all its leaves—recovered slowly.

Tremandra *ericoides* dropped both leaves and flower-buds—recovered slowly.

POLYGALACEÆ.

Polygala *oppositifolia*, P. *Dalmasiana*, and others, were quick in feeling the deleterious influence of the gas. They lost all their leaves and flowers, had to be closely pruned, and were slow in regaining their strength.

Muraltia *Heisteria*, quickly lost all its leaves and flowers; it never recovered, but lingered a short time, and died.

ACERACEÆ.

Acer. A row of silver maples (*A. dasycarpum,*) planted along the pavement on Eighteenth street, stood directly in the way of the current of escaping gas. They vegetated as usual in the spring, and grew vigorously through the season. The depth of frozen earth enveloping their roots, caused the gas to flow beneath, without doing them any injury.

MALPIGHIACEÆ.

Malpighia *coccigera* was stripped of every leaf, but recovered.

Stigmaphyllon *ciliatum* lost all its leaves, recovering slowly.

TERNSTROMIACEÆ.

Laplacea was powerfully affected. It lost all its leaves, and after lingering awhile with feeble vitality, died.

Camellia. These were in the full glory of bloom. About one hundred and twenty varieties were distributed through the green-house, embracing many large old plants upon the upper staging. In a day or two after the entrance of the gas, not a leaf, bud, flower, or wood-bud remained upon the largest and finest plants. The leaves did not shrivel, nor did they change color. At the slightest touch they fell off in showers. Those nearest the roof suffered most severely. A plant, which to an observer would seem to be in healthful vigor, would lose every vestige of greenness in a moment, upon being slightly shaken, and appear like a naked dead shrub. They had to be cut back extensively, some to the main stem, but the largest and noblest specimens were too much injured ever to put forth again. Others vegetated feebly, and revived slowly. The nurture of years will be requisite to restore them to their former condition and appearance.

Thea *viridis* was affected in the same manner, but recovered more readily.

CLUSIACEÆ.

Mammea *Americana* lost all its leaves, and was so badly injured that it died.

MAGNOLIACEÆ.

Magnolia *pumila* and *M. fuscata* lost all their foliage, but recovered through the summer.

Tasmannia lost all its leaves, and recovered again.

FUMARIACEÆ.

Dielytra *spectabilis* suffered considerably in the loss of its leaves and flower buds, but finally recovered.

BERBERIDACEÆ.

Berberis *Darwinii* lost all its leaves and buds; recovered slowly.

VITACEÆ.

Cissus *discolor*, although far removed from the source of the mischief, was unusually sensitive. The whole plant withered, leaf, tendril, and branch, and was almost immediately killed.

Vitis. A row of foreign grape vines, planted in a prepared border inside of the green-house, and trained up the wall and along the rafters, were not in leaf at the time. *The gas passed directly through their masses of fibrous roots.* On stooping down, the strong odor of gas was encountered for some distance. This was more apparent on taking up handfuls of the fresh earth, which was unmistakably fœtid. Notwithstanding these facts, the vines vegetated early in the Spring, and grew vigorously, although they bore no fruit. As their roots lay directly within the gaseous influence, it is reasonable to attribute their preservation to their state of inaction at that time.

PITTOSPORACEÆ.

Pittosporum. Large old specimens were considerably injured. They lost not only all their foliage, but the young wood. *P. Mayii* lost its leaves. They all recovered slowly.

Sollya *heterophylla* lost all its foliage—recovered.

EPACRIDACEÆ.

Epacris. The collection embraced many new and rare varieties, some recently imported. Being in good health, the greater part were in bloom, but they were denuded of leaf and flower. Some died ; the majority struggled for life through the summer, and finally recovered. This genus was most severely injured.

FRANCOACEÆ.

Francoa *sonchifolia* lost all its foliage—recovered.

ERICACEÆ.

Erica. They were somewhat slow in manifesting their injuries. No positive change was apparent for some days, after which they shed their leaves. They have never recovered entirely, and some have died.

Andromeda lost all the leaves and flowers, and recovered.

Clethra were bared of every leaf, and had to be cut back ; they recovered shortly afterwards.

Azalea. A large number of fine specimen plants, including about seventy hybrid varieties, were upon a latticed table immediately over the leak. They lost nearly all their foliage, and dropped their flower buds. A few lingered on and died, but the greater part recovered entirely.

Rhododendron. Numerous large specimens, embracing many hybrids, were in different parts of the green-house. They did not show any change for some days, then gradually dropped their flower buds, and a portion of the foliage. They recovered gradually.

AURANTIACEÆ.

Limonia, Citrus. These plants were keenly sensitive. Large old specimens, growing in tubs on the upper platform, were stripped at once. The stage was covered with leaves, and oranges and lemons in all stages of growth, from fruit just formed to that fully matured. The tender wood was blackened and killed, so that they had to be cut back to the main branches. Attention, and careful nursing restored them somewhat, although they are very slow in recovering their former vigor.

RUTACEÆ.

Almeidea *macropetala* lost its foliage, and recovered.

Zieria *macrophylla* lost all its foliage, was much affected, and recovered but slowly.

Boronia. All the members of this genus were considerably injured. They sustained the loss, not only of all their foliage and flower buds, but of the tender twigs. Ever since the accident they have been feeble and sickly, and it is not likely that they will ever recover.

Eriostemon. Although they all lost leaves and flowers, and were entirely denuded, they were not long in recovering, and began to put forth new leaves in a short time.

Crowea. They quickly lost every leaf, were considerably injured, and finally recovered.

Correa. A fine collection of large specimen plants of this genus, were in the green-house, just opening into full bloom. Leaf and flower at once fell off; they had to be pruned largely, and were long in showing signs of life. Many were too severely injured to recover, and died soon after the accident.

Adenandra *fragrans* was killed outright.

Coleonema lost all the foliage, but gradually recovered.

Diosma dropped all their leaves immediately, and were slow in recruiting.

LINACEÆ.

Linum *trigynum.* A fine large specimen plant in full flower lost every leaf and blossom. It required close pruning, and recovered in a few weeks.

OXALIDACEÆ.

Oxalis suffered the loss of foliage and flowers, but speedily regained their health.

BALSAMINACEÆ.

Impatiens lost their flowers and foliage—recovered.

GERANIACEÆ.

Pelargonium. Several hundred choice plants were in training as specimens, and placed upon hanging shelves near the sash. The effect upon them was most powerful. It involved the entire loss of leaves and branches. They presented the appearance of plants after being scalded or severely frozen, and of course were killed.

PORTULACACEÆ.

Calandrina *brevipes* lost all its leaves, but recovered.

THYMELACEÆ.

Daphne. Numerous specimens of *D. odora* and *D. Indica* lost flowers and foliage entirely, since which time they have been sickly, and have not fully recovered.

Pimelea *spectabilis*, a splendid plant, perhaps one of the finest specimens of its kind in the country, was ruined. It shed all its leaves and flower buds, but from its vigorous habit put forth again. After lingering a few months, it withered and died.

PROTEACEÆ.

Grevillea. Of three species in the Green-house, *G. lavendulacea*, *G. Thelemanniana*, and *G. Sternbergii*, not one survived. They were too much injured to make any effort toward resuscitation, and were killed outright.

Hakea *mucronata* was entirely stripped of its foliage, but gradually recovered.

LAURACEÆ.

Laurus *camphora* shed a portion of its foliage. *L. cassia* and *L. cinnamomum* were not affected.

FABACEÆ.

Brachysema lost their foliage and flowers—recovered.

Oxylobium. Of several species, every one was stripped of foliage, but they all recovered.

Podolobium also lost all their foliage and recovered.

Chorozema. Fine large specimen plants were just coming into bloom. They suffered greatly in the loss of all their flowers, and a large portion of the foliage. Their recovery was slow.

Burtonia *conferta* was killed. *B. pulchella* was greatly injured, but seems in a fair way to recover.

Aotus *gracillima* lost all its leaves and flowers. It put forth after a considerable interval, and recovered.

Dillwynia *elegans* lost its foliage and flowers—recovered.

Eutaxia lost both leaves and flower buds—recovered.

Gastrolobium dropped their foliage entirely, and were slow and feeble in recovering.

Pultenæa shed all their leaves and flower buds—recovered.

Mirbelia lost all the leaves and flower buds—recovered gradually.

Hovea *purpurea longiflora* lost every leaf and flower—recovered slowly.

Bossiæa were greatly injured. They lost their foliage and the young wood. and recovered slowly.

Goodia lost all their foliage—recovered.

Templetonia lost all their leaves, and recovered slowly.

Genista recovered, with the loss of leaves and young wood.

Cytisus *onsspermum* was considerably injured. It lost flowers and leaves, and was slow in recovering.

Indigofera suffered the loss of all the foliage—recovered.

Clianthus *magnificus* and *C. puniceus* were both killed. They never put forth again after losing their leaves.

Swainsonia lost all their leaves, had to be pruned back, and were slow in recovering.

Coronilla *glauca* was killed. It showed no vitality after losing its leaves.

Kennedia were quick to lose all their foliage and flowers. They all recovered.

Zichya shed all the foliage—recovering slowly.

Fagelia *bituminosa* lost its leaves, and recovered.

Poinciana *Gilliesii* lost its leaves and recovered.

Mimosa *sensitiva arborea* was in flower at the time. It was stripped of all verdure, had to be cut back, and was rather slow in recovering.

Acacia. About forty species were in the green-house, many of them large plants. They were covered with flower buds, and just coming into bloom. Not a leaf, bud, nor wood-bud remained. As a general thing, the young wood was so injured as to render it necessary to cut them back to the main trunk. Several very large specimens of *A. pubescens* had to be entirely topped. In a few weeks they showed signs of life, grew with vigor, and at this time seem as healthy as before the accident.

Calliandra *brevipes* lost its foliage, and recovered.

Inga were very sensitive. They lost their foliage amongst the first, but with commendable vitality were as quick in putting forth again.

ROSACEÆ.

Rosa lost all their flowers and foliage; owing to close pruning, which was necessary, they recovered slowly.

Spiræa. They were in full flower. Every leaf and blossom dropped off: after a few weeks they put forth again.

HYDRANGEACEÆ.

Hydrangea. Though near the leak, as they were not in leaf, they sustained no injury.

Adamia. Of several varieties in the hot-house, all were greatly injured. They suffered, not only in the loss of their foliage, but in the wood also, which had to be closely cut back. Their recovery was slow.

Bauera were also severely affected. They lost all their leaves immediately, and recovered slowly.

LYTHRACEÆ.

Cuphea. They were quick to lose all their leaves and flowers, their branches looked withered for a while, but they finally put forth on the old wood.

RHAMNACEÆ.

Ceanothus *divaricatus* suffered the loss of all its foliage ; recovered gradually.

CELASTRACEÆ.

Euonymus *fimbriata*, although a plant of apparently hardy growth, was one of the first to suffer. Being near the leak it dropped every leaf immediately, and was long in recovering.

APOCYNACEÆ.

Allamanda. Numerous large specimen plants of *A. cathartica*, *A. neriifolia*, *A. verticillata*, *A. grandiflora*, *A. Schottii*, &c., were growing in the hot house. Every plant was seriously injured in the loss of wood-buds and leaves. Although their recovery seemed doubtful for some time, they slowly regained their foliage and former vigor.

Arduina *bispinosa*, lost part of its leaves, but was not much injured.

Alyxia lost all the foliage, and recovered again.

Vinca lost all their leaves and flowers—recovered.

Plumieria *rosea* shed its foliage—recovered.

Strophanthus lost their leaves and recovered.

Beaumontia lost all their foliage and buds—recovered slowly.

Rhyncospermum *jasminoides* was sensitive to the influence of the gas. It recovered slowly after the total loss of leaves and flowers.

Echites *Harrisii* lost all its leaves, although growing in the orchid house. Had it been nearer the leak, it would no doubt have been killed. *E. picta*, although much nearer the leak, was not so sensibly affected.

Dipladenia *crassinoda* was strongly affected, as was the case with *D. urophylla*. They lost their leaves and young branches.

Roupellia recovered after the loss of all the foliage.

GENTIANACEÆ.

Chironia lost all their leaves and flowers, recovering very slowly.

OLEACEÆ.

Olea *fragrans* was specially sensitive. Of numerous specimens in different parts of the house, all lost every leaf and flower, and were very slow in recovering.

SOLANACEÆ.

Brugmansia *Knightii* sustained the immediate loss of all its foliage, and quickly recovered.

Solandra lost all foliage, and was considerably injured—recovered with the loss of young wood.

Juanulloa lost all its leaves and recovered.

Cestrum. All the species lost their leaves and flowers, and recovered.

Habrothamnus lost part of their foliage, and dropped all the flowers. They recovered without sustaining permanent injury.

Fabiana lost foliage and flower buds, and recovered.

ASCLEPIADACEÆ.

Schubertia *graveolens* lost all its leaves, and was too severely injured to survive. It died soon afterwards.

Physianthus lost all the foliage, and recovered slowly.

Asclepias *curassavica* lost flowers and leaves—recovered.

Dictyanthus *Pavonii* was considerably injured by the loss of leaves, but recovered very slowly.

Pergularia *odoratissima* lost only a portion of the foliage, and recovered.

Stephanotis *floribunda*, as well as *S. Thouarsii*, were fine large healthy plants. They lost their foliage and died, although considerably removed from the leak.

Cryptolepis *longiflora* lost its flowers and the greater part of the leaves. It suffered greatly, and its ultimate recovery was for a long time a matter of uncertainty.

Cyrtoceras *multiflorus* and *C. reflexus*, although in the hot-house, were both killed at once.

Hoya. Numerous specimens of a dozen species were distributed through all the houses. No decided effect was observable in any individual. They did not shed their leaves.

Ceropegia *elegans* lost all its foliage, and recovered.

Stapelia were not affected in any perceptible degree.

CONVOLVULACEÆ.

Ipomœa *Horsfalliæ* although far remote in the orchid house, lost all its leaves and flowers. It showed itself to be unusually sensitive.

POLEMONIACEÆ.

Cantua lost all their leaves, and recovered.

PLUMBAGINACEÆ.

Plumbago lost all their flowers and foliage; were not long in recovering.

PRIMULACEÆ.

Primula. They were all cut down to the ground, but in a short time grew out again.

Cyclamen lost all their flowers, but were not otherwise injured.

MYRSINACEÆ.

Ardisia *crenulata* and *A. crenulata fruct. alb.* were entirely stripped of leaves and berries. Being powerfully affected, they were some months in recovering.

JASMINACEÆ.

Jasminum of several varieties lost all their flowers and leaves. They grew out, after lying prostrate several months.

EHRETIACEÆ.

HELIOTROPIUM. Many plants of this genus were in flower. Strange to say, they were but slightly affected, and lost neither flowers nor foliage. This seems the more remarkable, as their peculiar sensibility to the smoke of tobacco renders it necessary to remove them from the houses, when fumigating to destroy the aphides, or green fly. In this instance they grew on and flowered, entirely regardless of the destruction around them.

LAMIACEÆ.

SALVIA suffered in the loss of all their foliage and young wood; they had to be cut back and recovered slowly.

GARDOQUIA *Hookerii* was one of the most sensitive. It lost every leaf, and was a long time time in recovering.

SCUTELLARIA lost all their foliage, and recovered.

PROSTANTHERA *retusa* was powerfully affected; it lost all its foliage and was killed.

WESTRINGIA lost all the foliage, and recovered.

VERBENACEÆ.

VERBENA were not much injured.

LANTANA were dry, and uninjured.

CLERODENDRON were mostly dry, and unaffected. *C. splendens* was in leaf, and suffered considerably in the loss of foliage, but recovered.

GESNERIACEÆ.

COLUMNEA were stripped of their foliage, but recovered slowly.

HYPOCYRTA *strigulosa* lost all its leaves, and put forth in a very short time.

NEMATANTHUS shed all their leaves immediately—recovered in a short time.

ALLOPLECTUS lost all their leaves and wood-buds—recovered in a few weeks.

GESNERA lost all their foliage and blossoms—recovered.

ACHIMENES were dry, and not affected.

GLOXINIA, dry and uninjured.

LIEBIGIA lost all its foliage, and recovered slowly.

ÆSCHYNANTHUS. Of numerous species, all were much injured. They not only lost their flowers and entire foliage, but a portion of the wood. Before the leaves dropped off they presented the usual appearance of plants badly frozen. They all recovered during the summer.

AGALMYLA *staminea* was in nowise affected.

MOUSSONIA lost all its leaves and flowers, and recovered.

CHIRITA parted with all their foliage, and were slow in recovering.

ISOLOMA were not sensibly affected.

BIGNONIACEÆ.

BIGNONIA *venusta* was planted in the open ground in the hot house. It twined over the rafters for a great distance, and was just coming into bloom. Not a leaf, wood-bud, or flower remained, and many months elapsed before it recovered.

ADENOCALYMNA *comosum* lost all its foliage—recovered.

SPATHODEA lost all the leaves, and recovered.

TECOMA *capensis* lost all its leaves, and recovered.

ACANTHACEÆ.

Henfreya *scandens* lost all its leaves, and recovered.

Hexacentris *Mysorensis* was in the orchid house, side by side with *Ipomœa Horsfalliæ.* While the latter was seriously injured, the former exhibited no evidence of being affected.

Ruellia *formosa* lost all its foliage, and was slow in regaining its strength.

Geissomeria lost all their flowers and foliage, but recovered rapidly.

Aphelandra had to be cut back with the loss of all their leaves and flowers. They grew out in a short time.

Thyrsacanthus *rutilans* lost all its leaves and flowers: it had to be cut back, and soon grew again.

Porphyrocoma *lanceolata* lost all its foliage, which grew out rapidly in a short time afterwards.

Cyrtanthera lost all its foliage, and recovered.

Justicia lost all their leaves and flowers—grew out again.

Eranthemum recovered slowly after the entire loss of leaves and flowers.

SCROPHULARIACEÆ.

Browallia *Jamesonii* was killed. A young plant in a distant part of the hot house was saved.

Brunsfelsia lost all its leaves, and was thrown back for some months: recovered slowly.

Franciscea. Of half a dozen species in the hot house every plant immediately shed all its leaves and flower buds. A large specimen of *F. confertiflora* was just coming into bloom. After being totally denuded, it put forth leaves and flower buds, and was covered with blossoms. They all recovered without serious injury.

Russellia *juncea* lost all its leaves, and was rather tardy in putting forth again.

Diplacus *elegans* lost all its leaves, and recovered without further injury.

Mimulus. All of this genus were killed. They withered to the root at once, and showed no sign of life afterwards.

Torenia *asiatica* lost both leaves and flowers—recovered rapidly.

Buddlea lost all the leaves and flowers—recovered.

Veronica lost all their foliage and flowers—recovered.

LOBELIACEÆ.

Siphocampylos lost all their leaves; had to be cut back, and grew shortly afterwards.

Centropogon *fastuosus* lost all its foliage, and soon recovered.

GOODENIACEÆ.

Leschenaultia suffered greatly in the entire loss of leaves and tender wood; they were slow in recovering.

ASTERACEÆ.

Ageratum *cœlestinum* lost all its leaves and flowers, and had to be cut back to the mature wood. They were very slow in recovering.

Stevia lost all their leaves and flowers, requiring close pruning; they grew again.

Conoclinium lost part of their foliage, and all their flowers. They had to be cut back, and grew again.

Aphelexis. Although slow to exhibit any change, they were sufficiently affected to retard their growth.

Cineraria were very sensitive; they lost their foliage immediately, and recovered.

Barnadesia *rosea* lost all its flowers and leaves, and recovered.

Stifftia lost all the foliage, and was slow in recovering.

COMBRETACEÆ.

Poivrea recovered after the loss of all their leaves.

Combretum lost all their foliage, and required some months to recover.

Quisqualis, dry, and not affected.

ONAGRACEÆ.

Fuchsia. Over fifty specimen plants, some of them more than eight feet in height, were in the green and hot-houses, coming on for exhibition of the Pennsylvania Horticultural Society. They were ruthlessly stripped of all foliage, and the branches injured almost to the root. Nearly all had to be thrown away, and the few which remained were useless for the season.

Lopezia lost all its foliage, and recovered.

MELASTOMACEÆ.

Centradenia, although remote from the leak, were among the first to feel the effects of the gas. Leaves and flowers were all killed, and the plants recovered very slowly.

Lasiandra *splendens* lost all its flowers and foliage, but recovered.

Melastoma, although not much affected, did not flower as usual.

Medinilla. Of this genus, comprising a number of species, all suffered very severely in the entire loss of leaves. Though remote from the leak, they required close pruning, and were many months in recovering.

MYRTACEÆ.

Callistemon suffered the loss of all the foliage, and recovered.

Metrosideros lost all their foliage and flower buds; they soon grew out again.

Leptospermum lost all their buds and flowers, with every leaf—recovered.

Psidium. These were severely handled. They lost all the foliage, had to be cut back closely and were a long time in reviving.

Myrtus were denuded of all foliage—recovered with scarcely an effort.

Eugenia were slow in recovering after the loss of foliage and young wood.

CACTACEÆ.

Epiphyllum. In common with all the family of *Cactacea*, these suffered considerably. Of a large number placed upon shelves in the hot-house, all were violently affected. The whole substance of the plant quickly turned yellow, and became soft and flaccid, as a frosted or scalded vegetable. The greater part were thrown away; the remainder were long in recovering.

ESCALLONIACEÆ.

Escallonia lost all their leaves, and recovered slowly.

PHILADELPHACEÆ.

Deutzia lost all its flowers and leaves with severe struggling for life, and was long recovering.

CINCHONACEÆ.

Serissa *fœtida* dropped all its leaves and flowers, and recovered with great rapidity.

Coffœa *arabica* was unusually sensitive. Although it stood far aloof from the leak, it shed every leaf, and remained leafless for some time. Its growth has been feeble ever since, and it may never fully recover.

Rogiera were severely injured, they all lost every leaf and flower, required close pruning, and were long recovering.

Pavetta *indica* lost all its foliage, and recovered.

Ixora. This genus suffered severely. Not a flower or leaf remained on any individual, and had they been nearer the leak it is probable they would have been killed. They were cut back closely, and have not yet fully recovered.

Oldenlandia *deppeana* lost all its leaves and flowers—recovered.

Pentas lost all their leaves and flowers, had to be cut back, and were not long in recovering.

Rondeletia lost all their leaves, and recovered.

Bouvardia lost all their leaves and flowers ; recovered.

Manettia lost all their leaves and flowers, and recovered.

Luculia *gratissima* lost all its leaves and buds, and withered slowly away. It finally died.

Gardenia lost all their foliage, and were slow in recovering.

Oxyanthus lost all the foliage, and recovered slowly.

Posoqueria *longiflora* was badly injured. It lost all its foliage, had to lose all its branches, even to within a short distance of the main trunk, and was very slow in recovering.

Mussænda *frondosa* lost all its leaves, flowers and bracteæ ; it recovered slowly.

Burchellia *capensis* lost every leaf and flower bud—recovered slowly.

Campylobotrys lost all its leaves and recovered.

CAPRIFOLIACEÆ.

Abelia. Some were not in leaf ; such as were in foliage lost every leaf, and recovered slowly.

CORNACEÆ.

Benthamia lost all its foliage, and recovered.

Aucuba lost all their leaves, had to be considerably pruned, and recovered slowly.

ARISTOLOCHIACEÆ.

Aristolochia lost all their leaves, grew again, but have not done well since.

June 1st.

Vice President Lea in the Chair.

Twenty-nine members present.

Mr. Slack exhibited two living specimens of Argulus catostomi, and stated that this animal had been described at length by Messrs. Dana and Herrick in